What is claimed is:

1. A bone plate system comprising:

a plate configured to stabilize a bone structure;

a hole passing through the plate;

a ring positionable within the hole; and

a fastener positionable through the ring, the fastener configured to couple the plate to a bone;

wherein a portion of the ring engages a groove in the fastener during use to secure the fastener to the ring.

2. The bone plate system of claim 1, wherein the fastener further comprises an opening configured to accept a drive head of an insertion tool.

3. The bone plate system of claim 1, wherein the groove in the fastener comprises a rim formed at a top edge of the fastener.

4. The bone plate system of claim 1, wherein the ring is configured to move within the hole to allow a shank of the fastener to be inserted into the bone at an angle that is oblique to the plate.

5. A bone plate system comprising:

a plate;

a hole through the plate, the hole extending from a top surface of the plate to a bottom surface of the plate, wherein a portion of the plate forms a wall of the hole;

a fastener configured to couple the plate to a bone, the fastener comprising a head and a shank; and

a ring positionable between the plate and the fastener within the hole, the ring comprising:

a base;

a projection extending upwards from the base; and

a finger extending from the projection substantially parallel to the base, the finger configured to secure the head in the ring during use.

6. The system of claim 5, wherein the head comprises a groove, and wherein the finger on the ring snaps into the groove to secure the fastener to the ring during use.

7. The system of claim 6, wherein the groove is a rim formed along a top edge of the fastener head.

8. The system of claim 6, wherein the finger fits in the groove, and wherein the fit between the finger and the groove allows the fastener head some axial freedom of movement within the ring.

9. The system of claim 5, wherein the ring is configured to swivel within the hole to allow the shank to be positioned and inserted into the bone at an angle that is oblique to the plate.

10. The system of claim 9, wherein the angle of insertion of the fastener is less than about 45 degrees relative to a plane substantially perpendicular to the plate.

11. The system of claim 9, wherein the angle of insertion of the fastener is less than about 30 degrees relative to a plane substantially perpendicular to the plate.

12. The system of claim 9, wherein the angle of insertion of the fastener is less than about 15 degrees relative to a plane substantially perpendicular to the plate.

13. The system of claim 5, further comprising texturing on a portion of an inner surface of the hole.

14. The system of claim 5, further comprising texturing on an outer surface of the ring.

15. The system of claim 5, wherein the head is configured to expand the ring against the wall of the hole to fix the fastener in position relative to the plate during use.

16. The system of claim 5, wherein the ring substantially surrounds the head during use.

17. The system of claim 5, further comprising a gap in a wall of the ring, said gap configured to allow the ring to expand and contract.

18. The system of claim 5, wherein a diameter of a portion of the head is greater than a diameter of the inner surface of the ring, so that the head exerts an expanding force on the ring during use.

19. The system of claim 5, wherein the head comprises a tapered outer surface, said tapered outer surface configured to expand the ring against the wall of the hole during insertion of the head into the ring.

20. The system of claim 5, wherein the ring comprises a tapered inner surface, said tapered inner surface configured to contact an outer surface of the head during insertion of the head into the ring.

21. The system of claim 5, wherein the hole comprises an inner surface and a width across the hole, the inner surface being curved such that the width varies in an axial direction along the hole.

22. The system of claim 5, wherein the hole comprises a substantially curved inner surface, and wherein the ring comprises a substantially curved outer surface, the curved outer surface of the ring complementing the curved inner surface of the hole.

23. The system of claim 5, wherein the plate comprises an upper surface and a lower surface, and wherein the ring comprises an outer surface and an outer ring width, and wherein the hole comprises a substantially curved inner surface and a width defined across the inner surface, the width of the hole varying in an axial direction along the hole, and wherein the width of the hole is greater than about the outer ring width at a location between the upper surface and the lower surface, and wherein the width of the hole is not greater than the outer ring width proximate the upper surface and the lower surface.

24. The system of claim 5, wherein the plate comprises an upper surface and a lower surface, and wherein the hole extends between the upper and lower surfaces, the hole having a width that varies in an axial direction along the hole, and wherein the ring is disposed within the hole, the ring having an outer ring width that is greater than about the width of the hole proximate the upper and lower surfaces, the outer ring width being sized relative to the width of the hole proximate the upper and lower surfaces to inhibit the ring from being removed from the hole.

25. The system of claim 5, wherein the ring is configured to reside within the hole without extending above an upper surface of the plate when the fastener couples the plate to a bone during use.

26. The system of claim 5, wherein the ring is configured to reside within the hole with a portion of the ring extending above an upper surface of the plate when the fastener couples the plate to a bone during use.

27. The system of claim 5, further comprising:

an additional hole in the plate;

an additional fastener comprising a head and a shank for coupling the plate to the bone; and

an additional ring for coupling the additional fastener to the plate.

28. The system of claim 27, wherein the fastener shank extends from a bottom of the plate at a first oblique angle relative to the plate, and wherein the additional fastener shank extends from a bottom of the plate at a second oblique angle relative to the plate.

29. The system of claim 28, wherein the fastener shank extends from the bottom of the plate in a diverging direction relative to the additional fastener shank during use.

30. The system of claim 28, wherein the fastener-shank extends from the bottom of the plate in a converging direction relative to the additional fastener shank during use.

31. The system of claim 5, wherein the fastener comprises a bone screw.

32. A bone plate system, comprising:

a plate;

a hole through the plate, the hole extending from a top surface of the plate to a bottom surface of the plate, and wherein a portion of the plate forms a wall of the hole;

a fastener for coupling the plate to a bone, the fastener comprising a head and a shank; and

a ring for coupling the fastener to the plate, the ring being positionable within the hole between the plate and the fastener, the ring comprising an outer surface, an inner surface and a ridge on a portion of the inner surface;

wherein the ridge on the ring is configured to couple with the head to secure the fastener to the ring during use.

33. The system of claim 32, wherein the head further comprises a groove in a portion of an outer surface of the head, and wherein the ridge is configured to snap into the groove to secure the fastener to the ring during use.

34. The system of claim 33, further comprising a gap between the ridge of the ring and the rim around the top surface of the head, said gap providing the head with some axial freedom of movement within the ring.

35. The system of claim 33, wherein the ring further comprises an opening in a wall of the ring, the opening configured to allow the ring to expand and contract.

36. The system of claim 32, wherein the ring further comprises a plurality of notches in the ring.

37. The system of claim 32, further comprising texturing on a portion of an inner surface of the hole.

38. The system of claim 32, further comprising texturing on a portion of the outer surface of the ring.

39. The system of claim 32, wherein the head is configured to contact the inner surface of the ring and expand the ring against the wall of the hole during use.

40. The system of claim 32, wherein the ring is configured to substantially surround the head during use.

41. The system of claim 32, wherein the ring further comprises a gap in a wall of the ring, said gap configured to allow the ring to expand and contract.

42. The system of claim 32, wherein the head comprises a tapered outer surface configured to expand the ring against an inner surface of the hole when the head is positioned within the ring during use.

43. The system of claim 32, wherein the inner surface of the ring is tapered.

44. The system of claim 32, wherein the hole comprises an inner surface and a width across the hole, the inner surface being curved such that the width varies in a direction axially along the hole.

45. The system of claim 32, wherein the hole comprises a substantially curved inner surface, and wherein the ring further comprises a substantially curved outer surface, wherein the curved outer surface of the ring engages the curved inner surface of the bore to allow the ring to swivel within the hole.

46. The system of claim 32, wherein the plate comprises an upper surface and a lower surface, and wherein the ring outer surface has an outer ring width, and wherein the hole comprises a substantially curved inner surface and a width defined across the inner surface, the width of the hole varying in a direction axially along the hole, and wherein the width of the hole is greater than about the outer ring width at a location between the upper and lower plate surfaces, and wherein the width of the hole is not greater than the outer ring width proximate the upper and lower plate surfaces.

47. The system of claim 32, wherein the plate comprises an upper surface and a lower surface, and wherein the hole extends between the upper and lower plate surfaces, the hole comprising a width that varies in a direction axially along the hole, and wherein the ring is disposed within the hole, the ring having an outer ring width that is greater than about the width of the hole proximate the upper and lower plate surfaces, the outer ring width being sized relative to the width of the hole proximate the upper and lower plate surfaces to inhibit the ring from being removed from the hole.

48. The system of claim 32, wherein the ring resides within the hole without extending above an upper surface of the plate when the fastener couples the plate to the bone during use.

49. The system of claim 32, wherein the ring is configured to reside within the hole with a portion of the ring extending above an upper surface of the plate when the fastener couples the plate to a bone during use.

50. The system of claim 32, wherein the ring is configured to swivel within the hole to allow the fastener shank inserted into the bone at an angle that is oblique to the plate.

51. The system of claim 50, wherein the angle of insertion of the fastener is less than about 45 degrees relative to a plane substantially perpendicular to the plate.

52. The system of claim 50, wherein the angle of insertion of the fastener is less than about 30 degrees relative to a plane substantially perpendicular to the plate.

53. The system of claim 50, wherein the angle of insertion of the fastener is less than about 15 degrees relative to a plane substantially perpendicular to the plate.

54. The system of claim 32, further comprising an insertion tool comprising:

a shaft;

a handle at a first end of the shaft; and

a driver head at a second end of the shaft, the driver head configured to mate with an opening in the head.

55. The system of claim 54, further comprising an extraction tool comprising:

a hollow shaft, said insertion tool configured to be rotatable within said hollow shaft to allow the handle of the insertion tool to be rotated to cause the removal of the fastener from the bone;

a handle at a first end of the hollow shaft; and

an extraction head comprising a tip at a second end of the shaft;

wherein the driver head of the insertion tool extends past the extraction head into the opening of the fastener, and the extraction head tip pushes the ridge of the ring off of the fastener to allow the fastener to be removed from the bone.

56. The system of claim 32, further comprising:

an additional hole in the plate;

an additional fastener comprising a head and a shank for coupling the plate to the bone; and

an additional ring for coupling the additional fastener to the plate.

57. The system of claim 56, wherein the fastener shank extends from a bottom of the plate at a first oblique angle relative to the plate, and wherein the additional fastener shank extends from the bottom of the plate at a second oblique angle relative to the plate during use.

58. The system of claim 57, wherein the fastener shank and the additional fastener shank extend from the bottom of the plate in diverging directions relative to each other.

59. The system of claim 57, wherein the fastener shank and the additional fastener shank extend from the bottom of the plate in converging directions relative to each other.

60. The system of claim 32, wherein the fastener comprises a bone screw.

61. A bone plate system comprising:

a plate for stabilizing a bone structure;

a hole through the plate, wherein a portion of the plate forms a wall of the hole;

a fastener configured to couple the plate to a bone head, said fastener comprising a head and a shank, wherein the head comprises:

an opening configured to accept a driver head of an insertion tool;

an outer surface; and

a plurality of apertures extending from the outer surface to the opening;

a ring positionable within the hole between the plate and the fastener; and

a locking mechanism comprising a top and a plurality of elongated members extending from the top the locking mechanism configured to insert in the opening of the head with a portion of the elongated members extendable through the apertures in the head of the fastener during use.

62. The system of claim 61, wherein the ring comprises at least one groove extending on a portion of an inner surface of the ring, and wherein elongated members of the locking mechanism extend through the plurality of apertures on the head, and wherein the elongated members engage said at least one groove on the ring to secure the fastener to the ring.

63. The system of claim 61, wherein the ring is configured to swivel within the hole to allow the shank to be inserted into the bone at an angle that is oblique to the plate.

64. The system of claim 63, wherein the angle of insertion of the fastener is less than about 45 degrees relative to a plane substantially perpendicular to the plate.

65. The system of claim 63, wherein the angle of insertion of the fastener is less than about 30 degrees relative to a plane substantially perpendicular to the plate.

66. The system of claim 63, wherein the angle of insertion of the fastener is less than about 15 degrees relative to a plane substantially perpendicular to the plate.

67. The system of claim 62, wherein a thickness of the portion of each elongated member that engages the groove is less than a height of the groove to allow the fastener head some axial freedom of movement within the ring.

68. The system of claim 61, wherein the head further comprises a rim running one portion of a top of the head, substantially around the outer surface proximate the top surface, wherein the rim is configured to interact with the ring to limit insertion depth of the fastener in the ring.

69. The system of claim 61, wherein the opening on the head further comprises a groove from a top surface of the head toward a bottom of the opening, and an aperture of the plurality of apertures extends into the groove.

70. The system of claim 69, wherein an elongated member of the locking mechanism is configured to mate with the groove on the opening so that the elongated member slides down the groove and engages the aperture in the groove during insertion of the locking mechanism into the head.

71. The system of claim 61, further comprising texturing on a portion of an inner surface of the hole.

72. The system of claim 61, further comprising texturing on a portion of an outer surface of the ring.

73. The system of claim 61, wherein the head is configured to expand the ring against the hole during insertion of the head into the ring.

74. The system of claim 61, wherein the ring substantially surrounds the head during use.

75. The system of claim 61, wherein the ring is configured to swivel within the hole to allow the shank to be positioned through the ring at a selected angle relative to the plate during use.

76. The system of claim 61, further comprising a gap in a wall of the ring.

77. The system of claim 61, wherein a diameter of the head is greater than a diameter of an inner surface of the ring, so that the head exerts an expanding force on the ring during use.

78. The system of claim 61, wherein the hole has an inner surface and a width across the hole, the inner surface being curved such that the width varies in an axial direction along the hole.

79. The system of claim 61, wherein the hole has a substantially curved inner surface, and wherein the ring further comprises a substantially curved outer surface, the curved outer surface shaped to engage the curved inner surface to allow the ring to swivel within the hole.

80. The system of claim 61, wherein the plate comprises an upper surface and a lower surface, and wherein the ring comprises an outer surface and an outer ring width, and wherein the hole comprises a substantially curved inner surface and a width defined across the inner surface, the width of the hole varying in a direction axially along the hole, and wherein the width of the hole is greater than about the outer ring width at a location between the upper and lower surfaces, and wherein the width of the hole is not greater than the outer ring width proximate the upper and lower surfaces.

81. The system of claim 61, wherein the plate comprises an upper surface and a lower surface, and wherein the hole extends between the upper and lower surfaces, the hole comprising a width that varies in a direction axially along the hole, and wherein the ring is disposed within the hole, the ring further comprising an outer ring width that is greater than about the width of the hole proximate the upper and lower surfaces, the outer ring width being sized relative to the width of the hole proximate the upper and lower surfaces to inhibit the ring from being removed from the hole.

82. The system of claim 61, wherein the ring is configured to reside within the hole without extending above an upper surface of the plate during use.

83. The system of claim 61, wherein the fastener is configured to be angulated relative to the plate such that the ring extends from the hole beyond a surface of the plate during use.

84. The system of claim 61, further comprising:

an additional hole in the plate;

an additional fastener comprising a head and a shank for coupling the plate to the bone; and

an additional ring positionable within the additional hole between the plate and the additional fastener.

85. The system of claim 84, the additional ring is configured to move within the additional hole to allow the additional fastener to be positioned and inserted into the bone at an angle that is oblique to the plate.

86. The system of claim 84, wherein the shank is positioned at a first oblique angle relative to the plate, and wherein the additional fastener shank is positioned at a second oblique angle relative to the plate.

87. The system of claim 86, wherein the shank and the additional fastener shank extend in diverging directions relative to each other.

88. The system of claim 86, wherein the shank and the additional fastener shank extend in converging directions relative to each other.

89. The system of claim 61, wherein the insertion tool further comprises:

a shaft;

a handle disposed at a first end of the shaft; and

the driver head disposed at a second end of the shaft, the driver head configured to couple to the opening on the head to allow insertion of the fastener through the ring and into the bone, the driver head comprising a hollow section configured to slide over and compress the locking mechanism during insertion of the fastener through the ring and into the bone, the hollow section configured to inhibit the elongated members from projecting through the apertures in the head during insertion of the fastener;

wherein removal of the insertion tool after insertion of the fastener through the ring and into the bone allows the locking mechanism to expand in the opening of the head, the expansion of the locking mechanism allowing the elongated members to project through the apertures in the head to engage the ring and secure the head in to the ring.

90. The system of claim 61, wherein the fastener comprises a bone screw.

91. A method for stabilizing a spine, comprising:

inserting a locking mechanism into an opening on a head of a fastener, wherein said head of the fastener comprises an outer surface, and an aperture extending from the outer surface to the opening;

positioning a plate adjacent to a bone, the plate comprising a hole;

inserting a ring within the hole, the ring comprising an outer surface, an inner surface, and a groove on a portion of the inner surface of the ring;

inserting a shank of the fastener through the ring and into the bone;

forcing the outer surface of the ring against an inner surface of the hole with the head to substantially fix the fastener relative to the plate; and

extending a locking mechanism projection through the aperture in the head to engage the groove to substantially secure the fastener to the ring.

92. The method of claim 91, wherein forcing the outer surface of the ring against an inner surface of the hole expands the ring.

93. The method of claim 92, wherein the ring has a gap, and wherein expanding the ring comprises widening the gap in the ring as the head of the fastener moves through the ring.

94. The method of claim 91, wherein a thickness of the locking mechanism projection is less than a height of the groove to allow the head some axial freedom of movement within the ring.

95. The method of claim 91, wherein the shank of the fastener extends from a bottom of the plate at an angle that is oblique to the plate during use.

96. The method of claim 91, further comprising drilling an opening into the bone before inserting the shank through the ring and into the bone.

97. The method of claim 96, further comprising tapping threads into the opening in the bone.

98. The method of claim 91, further comprising inserting a second fastener into the bone, the second fastener extending through a second ring positioned in a second hole in the plate such that shanks of the two fasteners extend from a bottom of the plate in diverging directions relative to each other.

99. The method of claim 91, further comprising inserting a second fastener into the bone, the second fastener extending through a second ring positioned in a second hole in the plate such that shanks of the two fasteners extend from a bottom of the plate in converging directions relative to each other.

100. The method of claim 91, wherein the ring is configured to swivel within the hole to allow the fastener to be inserted into the bone at a selected angle oblique to the plate.

101. The method of claim 91, wherein the head further comprises a rim running substantially around an outer surface proximate the top surface, and further comprising inserting the fastener into the bone until the fastener is stopped by the rim contacting the ring.

102. The method of claim 91, wherein the hole has a substantially curved inner surface, and the outer surface of the ring is substantially curved, and further comprising positioning the fastener prior to insertion into the bone by swiveling the outer surface of the ring across the inner surface of the hole.

103. The method of claim 91, wherein inserting the fastener into the bone further comprises using an insertion tool to insert the fastener, the insertion tool comprising:

a shaft;

a handle disposed at a first end of the shaft; and

a driver head disposed at a second end of the shaft, the driver head configured to mate with the opening on the head, the driver head comprising a hollow section configured to slide over and compress the locking mechanism;

wherein compression of the locking mechanism by the hollow section inhibits an elongated member of the locking mechanism from projecting through the aperture in the head during insertion of the fastener, and wherein removal of the insertion tool after insertion of the fastener allows the elongated member to project through the aperture in the head.

104. A method for stabilizing a spine, comprising:

positioning a plate adjacent to a bone, the plate comprising a hole;

inserting a ring within the hole, said ring comprising a base and a projection extending upward substantially perpendicular to the base, said projecting comprising at least one finger extending from the projection substantially parallel to the base;

placing a shank of a fastener through the ring so that an end of the shank extends from a bottom of the plate, said fastener comprising a head, said head comprising a groove;

inserting the fastener shank into the bone to connect the plate to the bone;

forcing an outer surface of the ring against an inner surface of the hole with the fastener head to substantially fix the fastener relative to the plate; and

snapping the fingers into the groove on the head to substantially secure the fastener to the ring.

105. The method of claim 104, wherein the groove comprises a rim formed along a top edge of the fastender head.

106. The method of claim 104, wherein forcing an outer surface of the ring against the inner surface of the hole comprises expanding the ring.

107. The method of claim 105, wherein the ring comprises a gap in a wall of the ring, and wherein expanding the ring comprises widening the gap in the ring as the head of the fastener moves through the ring.

108. The method of claim 104, wherein the fit of the fingers in the grooves on the head allows the fastener head some axial freedom of movement within the ring.

109. The method of claim 104, wherein inserting the fastener shank into the bone further comprises angulating the fastener shank at an oblique angle relative to the plate.

110. The method of claim 104, further comprising drilling an opening into the bone to receive the fastener prior to inserting the fastener shank into the bone.

111. The method of claim 110, further comprising tapping threads into the opening in the bone.

112. The method of claim 104, further comprising inserting a second fastener into the bone, the second fastener extending through a ring in a second hole in the plate such that the two fasteners extend in diverging directions relative to each other.

113. The method of claim 104, further comprising inserting a second fastener into the bone, the second fastener extending through a ring in a second hole in the plate such that the two fasteners extend in converging directions relative to each other.

114. The method of claim 104, wherein the ring swivels within the hole, allowing the fastener to be positioned and inserted into the bone at a selected angle relative to the plate.

115. The method of claim 104, further comprising inserting the fastener into the bone until the fastener is stopped by the finger of the ring snapping into the groove or rim on the head.

116. The method of claim 104, wherein the hole has a substantially curved inner surface, and wherein the ring has a substantially curved outer surface, and further comprising positioning the fastener prior to inserting the fastener into the bone by swiveling the outer surface of the ring about the inner surface of the hole.

117. The method of claim 104, wherein the ring does not extend from the hole beyond a surface of the plate after the fastener is substantially fixed relative to the plate.

118. A method for stabilizing a spine, comprising:

positioning a plate adjacent to a bone, the plate comprising a hole;

inserting a ring into the hole, said ring comprising an inner surface and a ridge on a portion of the inner surface;

placing a fastener through the ring, said fastener comprising a shank, a head, and a groove;

inserting the fastener into the bone to couple the plate to the bone;

forcing an outer surface of the ring against an inner surface of the hole with the fastener head to substantially fix the fastener relative to the plate; and

snapping the ridge of the ring into the groove to substantially secure the fastener to the ring.

119. The method of claim 118, wherein forcing an outer surface of the ring against an inner surface of the hole comprises expanding the ring.

120. The method of claim 119, wherein the ring has a gap in a wall of the ring, and wherein expanding the ring comprises widening the gap in the ring as the head of the fastener moves through the ring during use.

121. The method of claim 118, wherein a gap between the ridge and the groove allows the fastener head some axial freedom of movement within the ring.

122. The method of claim 118, wherein inserting the fastener into the bone to couple the plate to the bone further comprises angulating the fastener shank at an oblique angle relative to the plate.

123. The method of claim 118, further comprising drilling an opening into the bone to receive the fastener prior to inserting the fastener shank into the bone.

124. The method of claim 123, further comprising tapping threads into the opening in the bone.

125. The method of claim 118, further comprising inserting a second fastener into the bone, the second fastener extending through a second hole in the plate such that the two fasteners extend from the plate in diverging directions relative to each other.

126. The method of claim 118, further comprising inserting a second fastener into the bone, the second fastener extending through a second hole in the plate such that the two fasteners extend from the plate in converging directions relative to each other.

127. The method of claim 118, wherein the ring swivels within the hole to allow the fastener shank to be inserted into the bone at a selected angle oblique to the plate.

128. The method of claim 118, wherein the hole is configured to inhibit the ring from being removed from the hole, and wherein the hole is shaped to allow the ring to swivel within the hole.

129. The method of claim 118, wherein the ring does not extend from the hole beyond a surface of the plate after the fastener is substantially fixed relative to the plate.

130. The method of claim 118, wherein the ring swivels within the hole to allow the fastener shank inserted into the bone at a selected angle of less than about 15 degrees relative to a plane substantially perpendicular to the plate.

B'